



The role of networking in the competitiveness of firms



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ABSTRACT

Two main forces characterise production systems today: on the one hand, the increasingly global nature of markets and economies has resulted in increasing competition and a new, more global division of labour. On the other, the greater complexity of technology makes innovation a key aspect in the competitiveness of manufacturing firms. The establishment of cooperative networks seems to be important in both processes. This paper aims to explore these aspects by analysing the competitiveness of firms in four different sectors of the manufacturing industry: food, chemicals, electronics and vehicles. Data have been obtained from a survey conducted specifically for this purpose at company level in Spain. Findings from the empirical analysis, based on the application of the Polytomous Logistic Universal Model (PLUM), confirm the positive effects that the ability to network has on company performance. In particular, among all the potential organisations that work as partners of the firms, the paper shows the importance of intra-firm cooperation, the user–producer relationships and the cooperation between competitors.

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1. Introduction

The increasingly global nature of markets and economic activities has resulted in increasing competition and a new and more global division of labour. On the other hand, the greater complexity of technology makes innovation a fundamental and differentiated element for the competitiveness of firms. The establishment of networks seems to be important in both processes. The aim of this paper is to analyse the impact of relationships between manufacturing firms and other independent organisations on the improvement of competitiveness, by studying firms' preferences in choosing their partners, and analysing their networking abilities — essential elements to try and provide a solid framework for understanding whether or not firms are willing to engage in sharing knowledge with potential competitors.

The concept of competitiveness has been much discussed by academics.¹ Competitiveness normally applies as a relative term, not reflecting absolute performance, but generally having a double meaning related to economic well-being and trade performance of economies [2]. Considering the impact of knowledge-based economies, competitiveness is defined as a nation's ability to command significant world market share in high technology products while maintaining the living standards of its citizens [3]. This leadership connects industries and competitiveness because it derives from the interactions between firms, regions and countries, and the factors influencing competitiveness are not only resources and market conditions but also institutions and inter-company networks [4]. Networks are understood as a hybrid form of organisation defined by interactions among agents, institutions and environmental conditions [5–7]. They include strong and weak ties among agents, manifested in

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¹ For a critical view see [1].

formal contractual relationships such as subcontracting, strategic alliances or industrial consortia as well as informal ties, differing in duration and stability and the specificity of the task [8,9].

As far as current evidence allows, one objective of this paper is to observe whether network indicators differ between industries in fostering company competitiveness. It is also interesting to compare whether domestic and foreign-owned firms behave in different ways and to test the importance that belonging to an international network has in terms of competitiveness. We explore these two aspects through the performance of four industries in the manufacturing sector: food, chemicals, electronics and vehicles. In contrast to most available empirical evidence, this analysis focuses not only on high-tech industries but also on other less technologically sophisticated ones. In order to test degrees of networking and competitiveness at a company level, micro data were obtained from a survey on competitiveness conducted at company level in Spain.²

The paper is structured as follows: in the second section, we briefly review the main aspects of the relationships between globalisation, networks, technology and competitiveness that frame our empirical analysis. In the third section, there is a description of the competitiveness and technology-related variables from the Spanish survey results, differentiated according to both industries and the ownership of companies. In the fourth, there is a characterisation of the relationships that companies develop with other companies and also with other kinds of independent agents. In the fifth section, the empirical model is developed in two steps: firstly, an explanation of the competitive profile of firms according to a set of indicators that were specifically constructed following principal components' analysis; secondly, we explain the results obtained from the econometric estimation based on the application of the Polytomous Universal Model (PLUM), which allow us to confirm the role played by networking and innovation abilities in the level of competitiveness. Section six contains some concluding remarks.

2. Networks, technology and competitiveness

The establishment of networks has been an emerging issue over the last decades for understanding the improvement in competitiveness of firms, generating increased interest in scholars of various disciplines as well as in practitioners. In accordance with the literature, motivations for cooperation are grouped into two: the complexity of technological development and the uncertain and costly nature of research, and market access and search for opportunity [10]. It is possible to look at them not on an exclusive basis but taking its possible complementary character. The forces of the globalisation process imply an increasingly international scope in competition and at the same time, there is a global dispersion of innovative activities caused by the restructuring of the value chain in the most internationalised firms. Companies have evolved over recent decades toward the development of new organisational forms of production and inter-organisation partnerships have become a core component of the corporate strategy [9].

The arrival of new technology opportunities, the spread of innovation in the field of ITC and the shift of the external boundaries of firms justify the contribution of networks to the innovative capabilities of firms [11]. Nevertheless, explanations concerning the nature of these transformations are not completely new [12]. Companies' internal resources are in many cases insufficient to achieve greater economies of scale, to reduce the levels of uncertainty involved in accessing new markets and to exploit new business opportunities. For these reasons, it has been largely accepted that the reduction of transaction costs [13,14], such as those related to negotiations and the establishment of contracts between firms, is behind the emergence of a new framework of relationships. Networks can then be identified with a kind of hybrid form of organisation, with reciprocal patterns of communications and exchange, that combines the incentive structure of the markets with some hierarchical elements [15].

On the other hand, the increasing internationalisation of companies explains why local productive systems are characterised by contexts of competition in which both domestic and foreign-owned firms cohabit in the same geographical unit, in many cases operating in the same sector and then competing in the same international market segment. In these circumstances, access to new information and knowledge becomes a critical element and one of the most powerful motivations for the establishment of different external ties. The complexity of technology and the uncertainty of innovation justify more than two agents being involved in knowledge generation processes and external agents are observed more and more as a source of R&D. This would explain the greater collaboration with universities and public research centres in the development of products and processes, and with domestic and foreign companies as well as with customers [9]. Therefore, it is largely accepted that both competing and cooperating relationships may work in favour of the enhancement of firms' competitiveness levels [16,17,18], the underlying process being related to the growing importance that knowledge access has acquired in competitiveness, the role of technology in the globalisation process and the need to reduce transaction costs related to technology transfer [10,19–22].

Pioneering contributions on this topic in the literature of industrial organisation and innovation focused on the importance of geographical proximity in explaining the dynamic of company performance and innovation. While economic analysis has tried to explain how locations affect a firm's decision to cooperate with other agents, there has been a growing interest in the conditions under which knowledge flows take place and the issue of geographical proximity emerges as the main explanation for industrial and research activity agglomerations [23]. This has been a primary aim of the literature on industrial districts, namely, looking at firm clusters and their determinant factors. Available evidence confirms that networks may increase firms' competitiveness in

² Although this analysis is based on firms in Spain, this paper was produced as part of the Project called *Competitiveness*, under the V Framework Programme of the EU. The Spanish results come from a survey carried out in accordance with common methodological guidelines for all the European partners involved in the project. The objective was to obtain comparable data for Spain, Poland, Hungary and the Czech Republic, in order to prepare further comparative papers. Nevertheless, the authors are solely responsible for the views herein and they do not represent those of the EU, nor is the EU responsible for any use that might be made of data appearing in this paper.

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